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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,865	11/19/2003	Palanisamy Arjunan	2003B005/2	9338

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EXAMINER

RABAGO, ROBERTO

ART UNIT PAPER NUMBER

1713

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/717,865

Applicant(s)

ARJUNAN, PALANISAMY

Examiner

Roberto Rábago

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 29-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/5/2006 has been entered.

### ***37 CFR 1.131 Declaration***

2. The declaration of Palanisamy Arjunan filed 10/5/2006 has been reviewed and found sufficient to antedate the reference to Lehmus (US '010).

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 29-31 and 33-49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 29 (and claims 30, 31 and 33-49 as dependent therein) the intended scope of monomers cannot be determined because the specification and claims appear to set forth conflicting meanings of "α." The normal meaning of "α" in organic nomenclature indicates a terminal carbon, and therefore the intended meaning of "α, internal, non-conjugated diene monomer" would appear to require that the monomer include a terminal double bond and an internal double bond. However, at paragraph [0072] of the specification, the stated scope of α, internal, non-conjugated dienes includes ethylidene norbornene (apparently a misspelling of ethylidene norbornene), which has no terminal diene component. The inclusion of ethylidene norbornene renders indefinite applicants' intended meaning of "α," and therefore the scope of required monomers cannot be determined.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 29-31, 33-36, 38-41, 43-49 and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Agarwal et al. (US 2002/0013440).

The reference discloses and exemplifies making propylene/diene copolymers comprising >90% propylene and <2 wt% diene, wherein the copolymer has a crystallization temperature of 115-135°C, melting temperature of 152-158°C, and melt flow rate of 1-35 dg/min (see [0030] through [0033] and Examples 1-10). Although not stated to be preferred, use of vinylnorbornene as a specifically recommended diene at [0043] in the method of the reference is anticipatory within the meaning of 35 USC 102.

The reference does not discuss heat of fusion or branching index. However, the reference copolymers would inherently have the claimed heat of fusion in view of the high T<sub>c</sub> and T<sub>m</sub>, and furthermore have the claimed branching in view of the comonomer diene content. The reference has recommended the same metallocene catalysts and monomers as that which applicants indicate result in a branching index of less than 1. The burden of proof is shifted to applicants to show that the reference copolymers would not have the claimed branching index.

The declaration filed under 37 CFR 1.131 does not serve to antedate this reference because the declaration does not provide evidence of prior invention of the embodiments disclosed in the reference.

7. Claims 29-41, 43-49 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 6-25357.

The reference discloses in Examples 1-6 polymerization of propylene with a minor amount of alpha-internal diene in the presence of metallocene catalyst to make substantially isotactic diene-modified polypropylene. The reference has not reported the heat of fusion, crystallization temperature, melting temperature or branching index. However, all of these properties would be inherent for the following reasons. The examples report isotactic pentad content as high as 0.956 for diene content of 0.3 mol% (see Example 5), and a copolymer of such high isotacticity and low diene content would be expected to have very high  $T_m$ ,  $T_c$ , and heat of fusion, including values within the claimed range. The reference copolymers would necessarily have the claimed branching in view of the comonomer diene content. The reference copolymers would furthermore have the claimed melt flow rate because applicants have claimed an exceedingly broad range of conventional values. The burden of proof is shifted to applicants to show that the reference copolymers would not have the claimed unreported properties.

8. Claims 29, 30, 32-35, 37-41, 43-50 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (Eur. Polym. J. 1997).

The reference discloses propylene/diene copolymers wherein the diene is either 2-methyl-1,5-hexadiene or 7-methyl-1,6-octadiene with the claimed  $T_c$  and  $T_m$  (see Tables 1 and 2). The reference has not reported the heat of fusion, branching index or claimed melt flow rate. However, the reference copolymers would necessarily have the claimed heat of fusion in view of the high  $T_c$  and  $T_m$  values. Furthermore, the

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claimed melt flow would be inherent because applicants have claimed an exceedingly broad range of conventional values, and the reference copolymers would necessarily have the claimed branching in view of the comonomer diene content. The burden of proof is shifted to applicants to show that the reference copolymers would not have the claimed unreported properties.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 29-34, 37-39 and 43-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 5,166,273).

The reference discloses at col. 3, lines 14-60, the making of polypropylene including preferably 0.1-3 mol% of preferably 1,4-hexadiene, 2-methyl-1,5-hexadiene or 7-methyl-1,6-octadiene by use of a Ziegler catalyst. Although unexemplified, one of ordinary skill in the art would be motivated to make such diene-modified polypropylenes because the reference has suggested such processes. The reference has not reported any heats of fusion,  $T_m$  or  $T_c$ ; however, the disclosed diene-modified polypropylenes are clearly intended to be crystalline because the reference discourages excess diene content in view of decreased crystallinity (col. 3, lines 50-53). Therefore, the

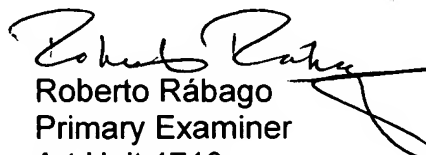
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recommended polypropylenes would inherently have heats of fusion,  $T_m$  and  $T_c$  within the claimed ranges because conventional substantially crystalline polypropylenes would be expected to have such properties. Furthermore, the claimed melt flow would be inherent because applicants have claimed an exceedingly broad range of conventional values, and the reference copolymers would necessarily have the claimed branching in view of the comonomer diene content. The burden of proof is shifted to applicants to show that the copolymers recommended in the reference would not have the claimed unreported properties.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberto Rábago whose telephone number is (571) 272-1109. The examiner can normally be reached on Monday - Friday from 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Roberto Rábago  
Primary Examiner  
Art Unit 1713

RR

November 22, 2006